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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,942	04/06/2001	Ray Alan Mentzer	10004068-1	6687

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EXAMINER

AGGARWAL, YOGESH K

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 08/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/827,942	Applicant(s) MENTZER, RAY ALAN	
	Examiner Yogesh K Aggarwal	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required.

i. Claims 1, 9, 17 recite the limitation “when a signal difference between said previously processed pixel and said current pixel is greater than a predefined threshold”. This limitation is recited in paragraphs 9 and 12 of the specification but is not included in the detailed description and drawings.

ii. Claims 7 and 15 recite the limitation “said conversion signal based on said low signal” is not included in the detailed description and drawings.

iii. Claims 12 and 14 recite the limitation “wherein said digital-to-analog converter is a ten bit analog-to-digital converter” is not included in the detailed description and drawings.

2. The disclosure is objected to because of the following informalities:

Paragraph 34 recites 7-bit flash ADC 5 is not disclosed in the drawings.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 6, 9, 10, 16, 17 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dolazza (US Patent # 4,573,035).

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[Claim 1]

A method of correcting erroneous image signals (col. 10 lines 31-40) comprising providing a high signal and a low signal (figure 7, +Ref and -Ref) based on an image signal of a previously processed pixel (output of element 282 in figure 7), said high signal and said low signal defining a signal range about said image signal of said previously processed pixel (+Ref and -Ref define a range); and digitizing an analog signal of a current pixel using said high and low signals as references to derive a digitized signal of said current pixel (output of block 280) within said signal range, including limiting said analog signal of said current pixel by said high and low signals (col. 10 lines 22-30). Dolazza is silent about taking a signal difference between said previously processed pixel and said current pixel to be greater than a predefined threshold.

However Official notice is taken of the fact that a current pixel will be an erroneous pixel if a signal difference between a previous pixel and current pixel to be greater than a threshold in order for the current pixel to be considered a defective pixel. Therefore taking the combined teachings of Dolazza and Official notice, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have detected a current pixel to be defective when a signal difference between a previous pixel and current pixel is greater than a threshold.

The benefit of doing so would be to have a defective pixel detection process, which is less computation intensive for a controller.

[Claim 2]

Dolazza teaches a step of converting said image signal of said previously processed pixel to said high signal and said low signal (figure 7, +Ref and -Ref).

[Claim 3]

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Dolazza teaches wherein said step of converting said image signal of said previously processed pixel includes digital-to-analog converting (figure 7, 286 and 290) said image signal of said previously processed pixel to said high signal and said low signal (figure 7, +Ref and -Ref), wherein said high and low signals are generated as voltages.

[Claim 6]

Dolazza is silent as to the type of analog-to-digital converter, however Official notice is taken of the fact that it is notoriously common to have a flash analog-to-digital converter be used for digitizing a current pixel in order to make the overall process faster. Therefore taking the combined teachings of Dolazza and Official notice, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have flash analog-to-digital converter be used for digitizing a current pixel. The benefit of doing so would be because flash A/Ds have high input bandwidth and very high speeds in the 1 to 4-Gsample/s range.

[Claims 9, 10, 16]

These are apparatus claims corresponding to method claims 1, 3, 6 respectively. Therefore they have been analyzed and rejected based upon method claims 1, 3, 6.

[Claim 17]

Dolazza teaches a method of correcting erroneous image signals (col. 10 lines 31-40) during analog-to-digital conversion comprising a sensor array of photosensitive pixels (figure 1, element 114), each of said photosensitive pixels being configured to accumulate an analog image signal when exposed to light (col. 5 lines 60-65) and an analog-to-digital converter unit (figure 1, element 125) operatively coupled to said sensor array to receive analog image signals from said photosensitive pixels, said analog-to-digital converter unit comprising a digital-to-analog

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converter (figure 286 and 288) that outputs a high signal and a low signal (figure 7, +Ref and –Ref) based on an image signal of a previously processed pixel (output of element 282 in figure 7), said high signal and said low signal defining a signal range about said image signal of said previously processed pixel (+Ref and –Ref define a range); and

An analog-to-digital converter (figure 7, element 290) having a high reference input and a low reference input to receive said high signal and said low signal (+Ref and –Ref), said analog-to-digital converter being configured to digitize an analog signal of a current pixel (output of block 280) using said high and low signals as references to derive a digitized signal of said current pixel within said signal range, including limiting said analog signal of said current pixel by said high and low signals (col. 10 lines 22-30, figure 7). Dolazza is silent about taking a signal difference between said previously processed pixel and said current pixel to be greater than a predefined threshold. However Official notice is taken of the fact that a current pixel will be erroneous pixel if a signal difference between a previous pixel and current pixel to be greater than a threshold in order for the current pixel to be considered a defective pixel. Therefore taking the combined teachings of Dolazza and Official notice, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have detected a current pixel to be defective when a signal difference between a previous pixel and current pixel is greater than a threshold. The benefit of doing so would be to have a defective pixel detection process, which is less computation intensive for a controller.

[Claim 21]

This claim is substantially similar to claim 16. Therefore it has been analyzed and rejected based upon claim 16.

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5. Claims 4, 5, 8, 11-14, 18,19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dolazza (US Patent # 4,573,035) in view of Kim (US Patent # 6,587,144).

[Claims 4 and 5]

Dolazza teaches the limitations of claim 1 but fails to teach “.... Wherein a step of comparing said analog signal of said current pixel with an analog signal of a previously processed pixel and further comprising a step of converting said image signal of said previously processed pixel to said high signal and said low signal, wherein said high and low signals are dependent on said comparing of said analog signal of said current pixel with said analog signal of said previously processed pixel”. However Kim teaches comparing (figure 1, element 42) a present black level signal (read as current pixel signal value) and a preset black reference value (read as previously processed pixel value) to up or down values so that the DC voltage level of the signal is adjusted (col. 2 lines 12-23)[DC voltage ca be either high or low and therefore can be read as high and low signals which are dependent on the comparison between a present black level and preset black reference value]. Therefore taking the combined teachings of Dolazza and Kim, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have comparing said analog signal of said current pixel with an analog signal of a previously processed pixel and further comprising a step of converting said image signal of said previously processed pixel to said high signal and said low signal, wherein said high and low signals are dependent on said comparing of said analog signal of said current pixel with said analog signal of said previously processed pixel. The benefit of doing so would be to correct the black level due to an incorrect pixel as taught in Kim (col. 2 lines 20-21).

[Claim 8]

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Dolazza teaches wherein said image signal of said previously processed pixel is a digital signal (output of element 282 in figure 7) but fails to teach “...., wherein said image signal has more bits than said digitized signal of said current pixel”. However Kim teaches that the A/d converter output has 10 bits as compared to a 6-bit black level reference value (col. 4 lines 25-30).

Therefore taking the combined teachings of Dolazza and Kim, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have an image signal having more bits than said digitized signal of said current pixel. The benefit of doing so would be to vary the black reference value as needed as taught in Kim (col. 4 lines 25-26).

[Claim 11]

This is an apparatus claim corresponding to method claim 8. Therefore it has been analyzed and rejected based upon method claim 8.

[Claim 12]

Kim teaches a ten bit analog-to-digital converter and a six-bit black reference value but it would be obvious to one skilled in the art to have a seven bit value in order to have more sensitivity (col. 4 lines 25-30).

[Claim 13]

This is an apparatus claim corresponding to method claims 4 and 5. Therefore it has been analyzed and rejected based upon method claims 4 and 5.

[Claim 14]

Dolazza in view of Kim teaches a ten bit analog-to-digital converter and a six-bit black reference value (Kim, col. 4 lines 25-30) but does not teach a seven-bit value black reference value.

However Official notice is taken of the fact that a seven-bit reference value is well known in the

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art in order to have more sensitivity. Therefore taking the combined teachings of Dolazza, Kim and Official notice, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have used a seven-bit value. The benefit of doing so would be to have a circuit, which has high sensitivity.

[Claim 18]

This claim is substantially similar to claim 11. Therefore it has been analyzed and rejected based upon claim 11.

[Claim 19]

This claim is substantially similar to claim 13. Therefore it has been analyzed and rejected based upon claim 13.

6. Claims 7, 15, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dolazza (US Patent # 4,573,035) in view of Embler (US Patent # 6,654,054).

[Claim 7]

Dolazza teaches the limitations of claim 1 but fails to teach "... a step of adding a conversion signal to said digitized signal of said current pixel, said conversion signal being based on said low signal". However Embler teaches that an anti-noise signal is added to the digital signal (col. 11 lines 32-38) where said anti-noise signal is based on some kind of low noise signal. Therefore taking the combined teachings of Dolazza and Embler, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have a step of adding a conversion signal to said digitized signal of said current pixel, said conversion signal being based on said low signal. The benefit of doing so would be to ensure an appropriate that an appropriate noise signal is cancelled as taught in Embler (col. 11 lines 32-38).

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[Claim 15]

This is an apparatus claim corresponding to method claim 7. Therefore it has been analyzed and rejected based upon method claim 7.

[Claim 20]

This claim is substantially similar to claim 15. Therefore it has been analyzed and rejected based upon claim 15.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K Aggarwal whose telephone number is (703) 305-0346. The examiner can normally be reached on M-F 9:00AM-5:30PM.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on (703) 308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YKA
August 3, 2004


TUAN HO
PRIMARY EXAMINER

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